OSMS

Optical Splitter Module

Product User Manual

Offices:

China, Beijing : tel. +86-10-5791-0655
Americas, Florida : tel. +1-703-579-6777
AsiaPac, Melbourne : tel. +61-3-9780-5100
Australia, Melbourne : tel. +61-3-9780-5100
EMEA, Netherlands : tel. +31-36-536-8011

info@pbnglobal.com

www.pbnglobal.com

© 2011 Pacific Broadband Networks. All rights reserved.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

OSMS

Optical Splitter Module

Product User Manual

Last update	19 September 2011
Document version	5a
Document reference	PBN.OSMS - Manual V5a - Released 19 Sep 11
Document status	Released
Prepared by	Pacific Broadband Networks
Prepared for	Product Users

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

Contents

1 Precautions 4
2 Introduction 5
2.1 Overview 5
2.2 Features 5
2.3 Models and Options 6
3 Installation 7
3.1 Equipment Inventory 7
3.2 Packaging and Transportation 7
3.3 Power and Cooling Requirements 7
3.4 Module Installation and Adjustment 7
3.5 Front Panel 8
3.6 Rear Panel 9
3.7 Port Allocation Examples 10
3.8 Port Allocation Example - Unequal split ratios 15
4 Technical Description 16
4.1 Overview 16
4.2 Physical Description 16
4.3 Alarm System 16
5 Software Description 16
5.1 OSMS and OCM Program Structure 16
5.1.1 Current Software 16
5.1.2 Release History 16
5.2 OCM user interface Lock for Control Variable Access 17
5.2.1 Unlock access to CONTROL variables 17
5.2.2 Lock access to CONTROL variables 17
5.3 Programming Sequence for OSMS 18
5.3.1 Selecting the Module within the OCM for Monitoring and Controlling 18
5.3.2 Monitoring OSMS Operating Parameters 19
5.4 OSMS- Operating Parameter List and Alarm Limits 20
6 Specifications 21
7 Product Warranty 22
8 Declaration of Conformity 23

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

1 Precautions

WARNING!

This equipment is intended for indoor applications.

To prevent fire or electrical shock, or permanent damage to the product, do not expose units to water or moisture.

- Ensure adequate cooling and ventilation as specified.
- The installation and operation manual should be read and understood before units are put into use.
- Always replace protective caps on optical connectors when not in use.
- The typical connectors fitted are SC/APC 8°. Note: 8° angle polished connectors must be used.
- Do not operate unit without all covers and panels properly installed.

Cleaning

Use only a damp cloth for cleaning front panel. Use a soft dry cloth to clean top of unit. Do not use spray cleaner of any kind.

Overloading

Overloading wall outlets and extension cords can result in a risk of fire or electric shock. Use approved electrical cords.

Damage requiring service

Unplug unit and refer servicing to Pacific Broadband Networks qualified service personnel only.

Servicing

Do not attempt to service this unit yourself. Refer all servicing to Pacific Broadband Networks qualified service personnel only.

WARNING!

Exposure to class 1M laser radiation is possible. Access should be restricted to trained personnel only. Do not view exposed fibre or connector ends when handling optical equipment.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

2 Introduction

2.1 Overview

The Optical Splitter Module (OSMS) has been designed with various optical splitter configurations for splitting optical signals at both 1310 nm and 1550 nm. The module easily fits into the OCM chassis with plug-and-play technology to suit a variety of applications.

The units can accommodate an optical splitter with up to eight output ports.

There are options for two splitters in one module with two or three output ports, or three splitters with two output ports.

Customised units with equal or unequal split ratios can be manufactured to special customer order.

The primary application is in CATV head-ends, but some GEPON style data-distribution networks may also use these splitters.

Microprocessor-based status monitoring is available for operation from the local OCM keypad or remotely via the network, using the PBN NMS3 network management software.

2.2 Features

- Plug-and-play OCM module.
- High quality A grade optical splitter for 1310 nm and 1550 nm wavelengths.
- SC/APC or E2000/APC connectors.
- Module presence indication via on-board processor. Shows unique identity of the module in the SMS inventory system and in the network diagrams.
- Available for equal splits, but also manufactured to order for customised split ratios.
- No alignments needed.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

2.3 Models and Options

Model code:

OSMS-[X]-[Y]-[Z] Optical Splitter Module

X Port options

1x2	2 port splitter
1x3	3 port splitter
1x4	4 port splitter
1x5	5 port splitter
1x6	6 port splitter
1x7	7 port splitter
1x8	8 port splitter
2x2	2 x (1x2 port) splitter
2x3	2 x (1x3 port) splitter
3x2	3 x (1x2 port) splitter

Y Optical connector options

SC	SC/APC connectors
E	E2000/APC connectors

Z Split ratios

0	Equal split ratios
%/%/…/%	Unequal split ratio in %

(Order in 5% increments totalling 100%, listing in ascending order with lowest ratio first.
Ratios for each port are labelled on unit.)

Examples:

OSMS-1x4-SC-0

4-port Optical Splitter Module with SC/APC connectors and equal split ratio.

OSMS-1x5-E-05/05/30/30/30

5-port Optical Splitter Module with E2000/APC connectors and split ratios of 5%, 5%, 30%, 30% and 30%.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

3 Installation

3.1 Equipment Inventory

On receiving your new OSMS, you should carefully unpack and examine the contents for loss or damage that may have occurred during shipping. Refer to warranty registration if loss or damage has occurred. The OSMS should consist of the following:

Qty	Description
1	OSMS optical splitter module
1	Installation and operating manual (includes individual test sheet)
1	Warranty registration certificate

3.2 Packaging and Transportation

Keep all packing boxes and packaging of the OSMS for future transport.

Use only the original packaging of the OSMS when transporting. This packaging has been specifically designed to protect the equipment.

3.3 Power and Cooling Requirements

The OSMS is powered by the power supply module of the OCM system.

The OSMS splitter module and its corresponding OCM chassis should be located in an environment not exceeding a temperature range from 0...45 ºC with the OCM fans running. If the internal module temperature (parameter P06) reaches 70 ºC, the module will activate an urgent alarm through the system.

Should the temperature exceed the above limits then the OCM should be relocated in the equipment rack where the ambient temperature will be < 45 ºC.

The OCM chassis should have adequate ventilation clearance as required. See the installation and operating instructions for your OCM chassis.

3.4 Module Installation and Adjustment

The following are the installation and module set-up steps:

1. Hold the module horizontal and parallel to the OCM slide rails and carefully insert into the chassis. No force should be used.

   Tip: When inserting the module into the guide rails, vertically twist the module slightly to check that the guides are properly seated on the rails.

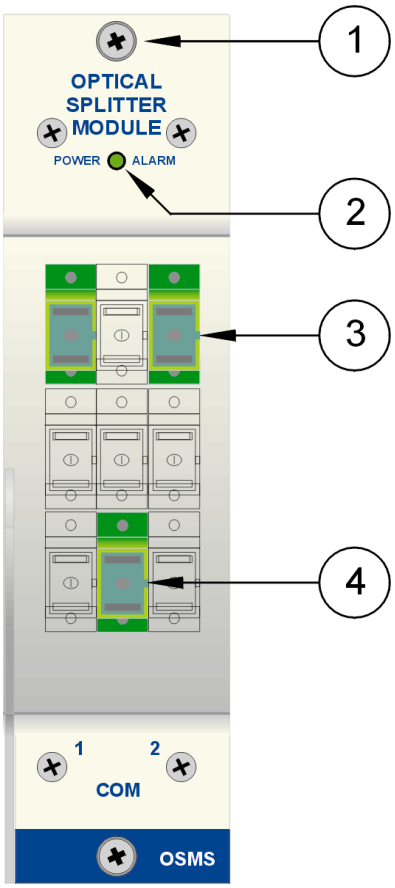
2. Screw in the two front-panel screws to secure the module to the chassis.
3. Always place protective dust caps on all optical connectors when not in use.
4. Connect to the desired optical common / output ports.
5. Verify, via the OCM user interface, that the module is recognised as part of the OCM system.

Note:

The module can be plugged in or out of the OCM chassis while power is being supplied to the OCM.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

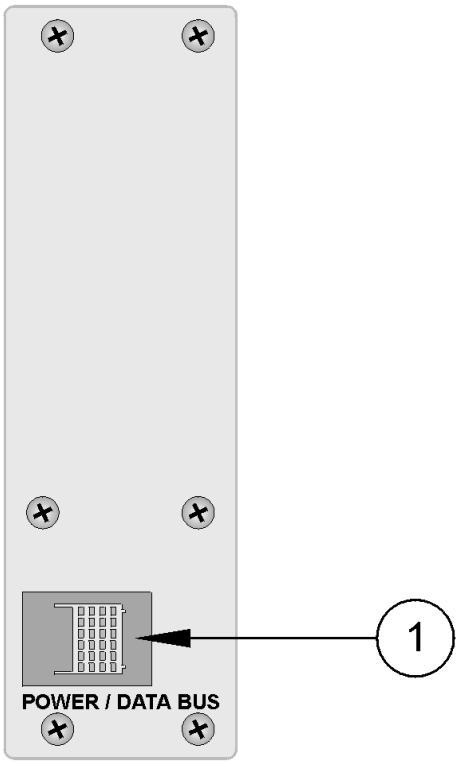
3.5 Front Panel



Item	Description	
1	SCREWS	Front-panel screws to fix OSMS to OCM.
2	POWER / ALARM	Power on indicator / Supply rail status. GREEN Power ON, supply OK. RED Urgent alarm, temperature is ≥ 70 ºC.
3	OPTICAL PORTS	1…8 optical ports. Available in 1x2 up to 1x8 split ratios, also in 2 x (1x2), 2 x (1x3) and 3 x (1x2) split ratios.
4	COM OPTICAL	Common optical port.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

3.6 Rear Panel

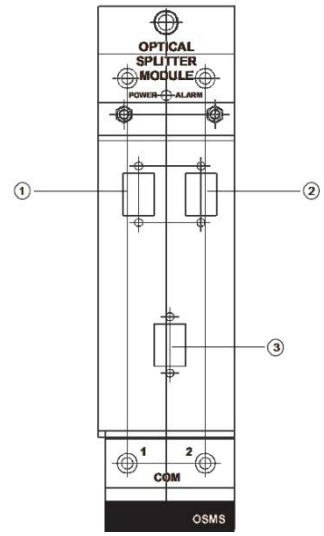


Item	Description	
1	POWER / DATA BUS	Power feed and data communication to and from power supply module via OCM bus plane.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

3.7 Port Allocation Examples

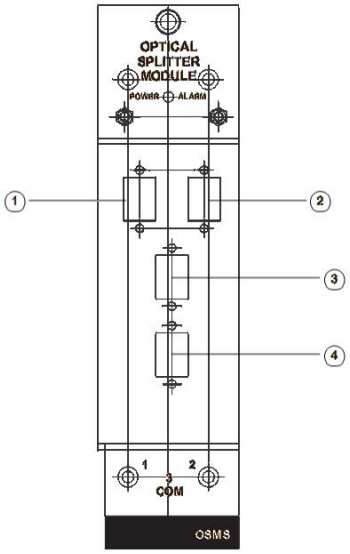
OSMS-1x2-SC-0



Port	*Label*	*Description*
1	1	Optical Output Port 1
2	2	Optical Output Port 2
3	COM	Common Port

Input signal is split equally to all outputs.
Typical through loss is 3.7 dB.

OSMS-1x3-SC-0

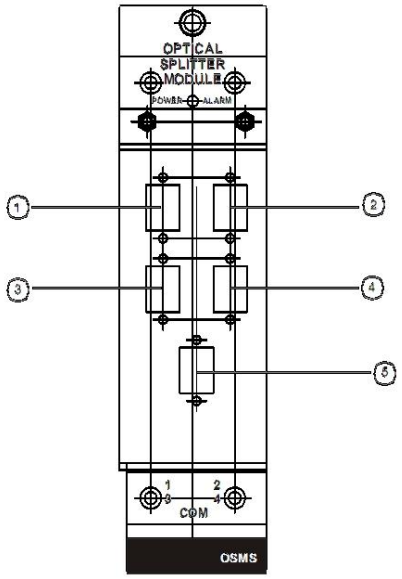


Port	*Label*	*Description*
1	1	Optical Output Port 1
2	2	Optical Output Port 2
3	3	Optical Output Port 3
4	COM	Common Port

Input signal is split equally to all outputs.
Typical through loss is 5.5 dB.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

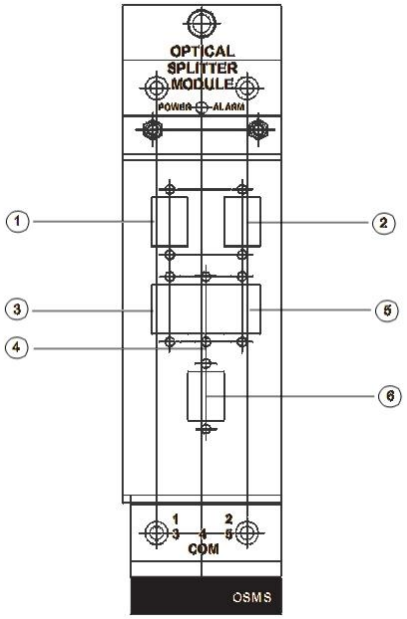
OSMS-1x4-SC-0



Port	*Label*	*Description*
1	1	Optical Output Port 1
2	2	Optical Output Port 2
3	3	Optical Output Port 3
4	4	Optical Output Port 4
5	COM	Common Port

Input signal is split equally to all outputs.
Typical through loss is 6.8 dB.

OSMS-1x5-SC-0

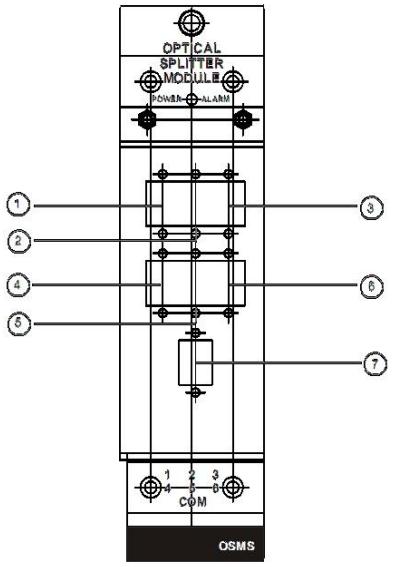


Port	*Label*	*Description*
1	1	Optical Output Port 1
2	2	Optical Output Port 2
3	3	Optical Output Port 3
4	4	Optical Output Port 4
5	5	Optical Output Port 5
6	COM	Common Port

Input signal is split equally to all outputs.
Typical through loss is 7.8 dB.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

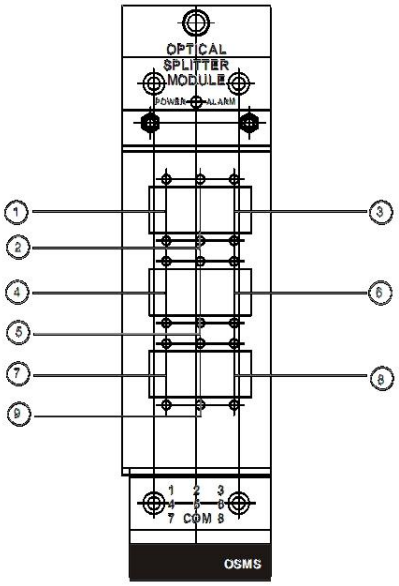
OSMS-1x6-SC-0



Port	*Label*	*Description*
1	1	Optical Output Port 1
2	2	Optical Output Port 2
3	3	Optical Output Port 3
4	4	Optical Output Port 4
5	5	Optical Output Port 5
6	6	Optical Output Port 6
7	COM	Common Port

Input signal is split equally to all outputs.
Typical through loss is 8.6 dB.

OSMS-1x7-SC-0

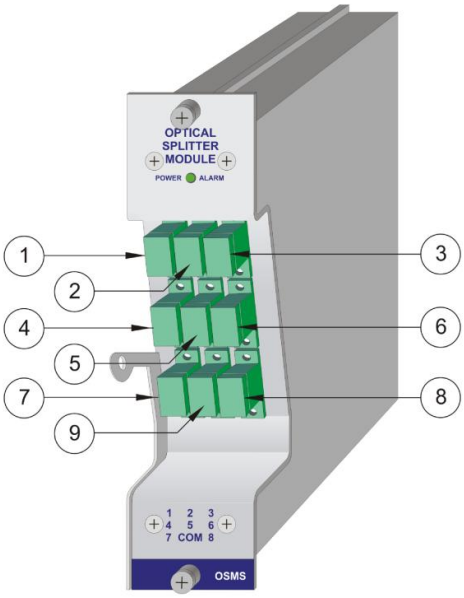


Port	*Label*	*Description*
1	1	Optical Output Port 1
2	2	Optical Output Port 2
3	3	Optical Output Port 3
4	4	Optical Output Port 4
5	5	Optical Output Port 5
6	6	Optical Output Port 6
7	7	Optical Output Port 7
8	8	Not used
9	COM	Common Port

Input signal is split equally to all outputs.
Typical through loss is 9.3 dB.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

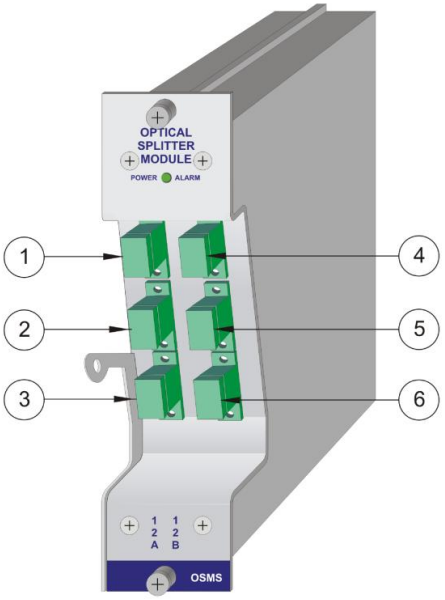
OSMS-1x8-SC-0



Port	*Label*	*Description*
1	1	Optical Output Port 1
2	2	Optical Output Port 2
3	3	Optical Output Port 3
4	4	Optical Output Port 4
5	5	Optical Output Port 5
6	6	Optical Output Port 6
7	7	Optical Output Port 7
8	8	Optical Output Port 8
9	COM	Common Port

Input signal is split equally to all outputs. Typical through loss is 9.9 dB.

OSMS-2x2-SC-0

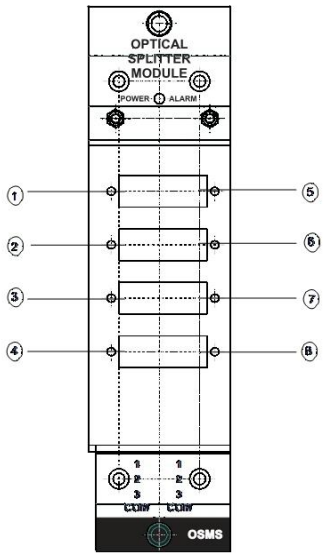


Port	*Label*	*Description*
1	1	Splitter A, Output Port 1
2	2	Splitter A, Output Port 2
3	A	Splitter A, Common Port
4	1	Splitter B, Output Port 1
5	2	Splitter B, Output Port 2
6	B	Splitter B, Common Port

Each input is split equally to its respective outputs. Typical through loss is 3.7 dB.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

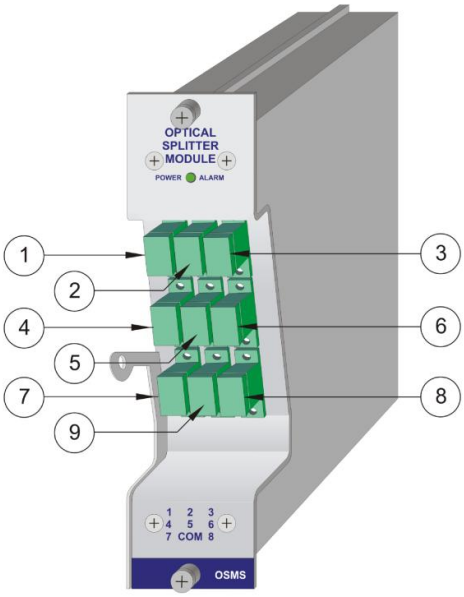
OSMS-2x3-SC-0



Port	*Label*	*Description*
1	1	Splitter 1, Output Port 1
2	2	Splitter 1 Output Port 2
3	3	Splitter 1, Output Port 3
4	COM	Splitter 1, Common Port
5	1	Splitter 2, Output Port 1
6	2	Splitter 2, Output Port 2
7	3	Splitter 2, Output Port 3
8	COM	Splitter 2, Common Port

Each input is split equally to its respective outputs. Typical through loss is 5.5 dB.

OSMS-3x2-SC-0



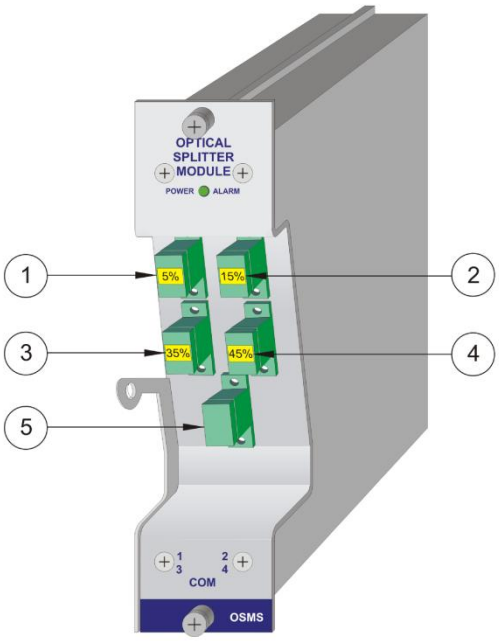
Port	*Label*	*Description*
1	1	Splitter 1, Output Port 1
2	2	Splitter 1, Common Port
3	3	Splitter 1, Output Port 2
4	4	Splitter 2, Output Port 1
5	5	Splitter 2, Common Port
6	6	Splitter 2, Output Port 2
7	7	Splitter 3, Output Port 1
8	8	Splitter 3, Output Port 2
9	COM	Splitter 3, Common Port

Each input is split equally to its respective outputs. Typical through loss is 3.7 dB.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

3.8 Port Allocation Example - Unequal split ratios

OSMS-1x4-SC-05/15/35/45



Port	*Label*	*Description*
1	1	Output Port 1: 5% of input
2	2	Output Port 2: 15% of input
3	3	Output Port 3: 35% of input
4	4	Output Port 4: 45% of input
5	COM	Common Port

OSMS units ordered with unequal split ratios are fitted with cover labels showing the relative percentage of optical power to the common signal of each output port.

Ports are arranged in ascending order of output strength from left to right, top to bottom.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

4 Technical Description

4.1 Overview

The optical splitter module comprises two sections, the fibre optic path and the OCM system integration section. The fibre optic splitter is a passive device which does not require electronics for its operation. The electronics used by the module are for the system integration to the OCM. This is controlled by the module's internal computer, which communicates back and forth to the OCM user interface via the OCM chassis back plane. This also allows the OSMS to integrate to the network management system used by the OCM.

4.2 Physical Description

The OSMS unit is designed to occupy one slot of the OCM chassis. The format is in line with the Light Link Series 3 products which is the family making up the OCM system. The front panel allows the user to easily identify any alarm status, switch state, and optical input status.

4.3 Alarm System

Since this module is primarily a passive device, it detects only two types of alarms.

POWER/ALARM LED RED (Urgent Alarm)

This indicates that the internal temperature of the module is ≥ 70 ºC. The module raises an urgent alarm condition to the OCM user interface, causing its LCD to flash (at menu item PBN STATUS).

POWER/ALARM LED OFF (Non-Urgent Alarm)

This indicates that there is no DC power to the module. This type of alarm is not communicated back to the OCM user interface.

5 Software Description

5.1 OSMS and OCM Program Structure

The basic control functions are similar to all plug-in modules for the OCM. Each module has its own specific parameters and menu item control functions. This section refers specifically to the OSMS.

The OSMS software is fully automatic and constantly monitors parameters as outlined in **Section 5.4**.

The program reports any conditions outside pre-set limits by operating the module's front-panel alarm LED and also signalling the OCM user interface module via the common alarm line.

5.1.1 Current Software

Please refer to PBN for latest firmware release.

The OSMS will only be recognised by an OCM user interface with software version V3.0 and higher.

5.1.2 Release History

Version 3.70 for the OSMS was the first software version that has been released.

The current version 3.71 operates in exactly the same way as far as the user is concerned. The differences are only in the internal processing of certain data.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

5.2 OCM user interface Lock for Control Variable Access

OCM software version 4.0 and above has a keypad lock and unlock feature for accessing the control variables. This is so that only the trained technician has the ability to change any of the CONTROL variables, restricts an unauthorised person from modifying the control variables, and prevents tampering.

The OCM user interface will require the keypad unlock sequence to be input by the user if they intend to access any of the CONTROL variables for any given module. This includes the LCD's CONTRAST level. With the keypad locked, the user has access to the following menu items only: PBN STATUS, ALARMS and MODULES. When the keypad is unlocked, access to CONTROL1, CONTROL2 and CONTROL3 becomes available.

5.2.1 Unlock access to CONTROL variables

1. Ensure that the display is at the home screen with PBN STATUS displayed. If you are not sure of your location in the menu, press **ENTER** twice to go to the home screen.
2. Press the **right** arrow key four times.
3. Press **ENTER** once.

You now have full access to the CONTROL menu items.

The interface is in its unlocked condition. The user has access to six menu items. They are: PBN STATUS, ALARMS, MODULES, CONTROL1, CONTROL2 and CONTROL3.

5.2.2 Lock access to CONTROL variables

There are three ways to lock access to CONTROL variables:

- Resetting the power
- Automatic time-out
- Manual operation

By resetting the power, the interface will start up in the locked condition by default.

Automatic time-out happens when there has been no activity (key pressing) for 15 minutes. This will also bring the display back to the PBN STATUS menu.

Manual Operation

1. Ensure that the display is at the home screen with PBN STATUS displayed. If you are not sure of your location in the menu, press **ENTER** twice to go to the home screen.
2. Press the **left** arrow key once.
3. Press **ENTER** once.

You have now locked access to the CONTROL menu items.

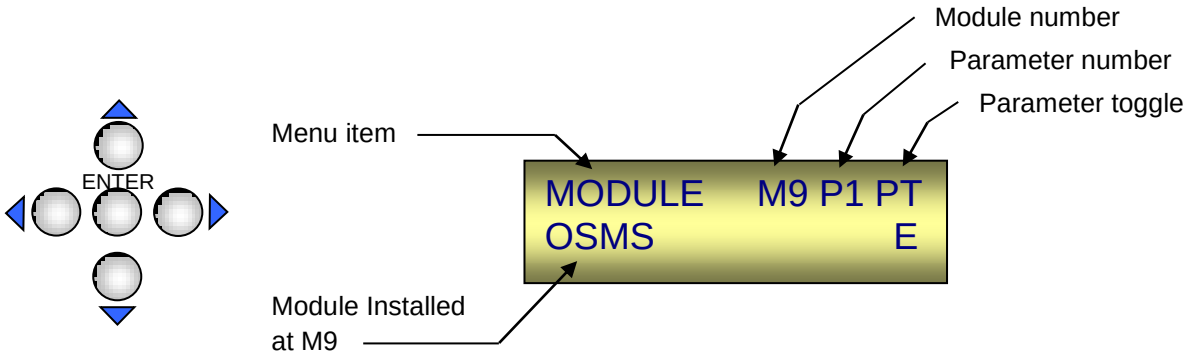
Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

5.3 Programming Sequence for OSMS

The user has the ability to perform the following functions on the OSMS switching module via the OCM user interface:

- Selecting the Module within the OCM for Monitoring and Controlling;
- Monitoring OSMS operating parameters.

5.3.1 Selecting the Module within the OCM for Monitoring and Controlling



- Scroll down to menu item **MODULE** using the ▼ key.
- Place the cursor at **MX** using the ▶ key, where **X** represents the slot number on the chassis, into which the module is inserted.
- Select the module number you want using the ▼ or ▲ keys, e.g. if OSMS is in slot 9, select **M9**.
- You have now selected the module within the OCM to monitor and control.

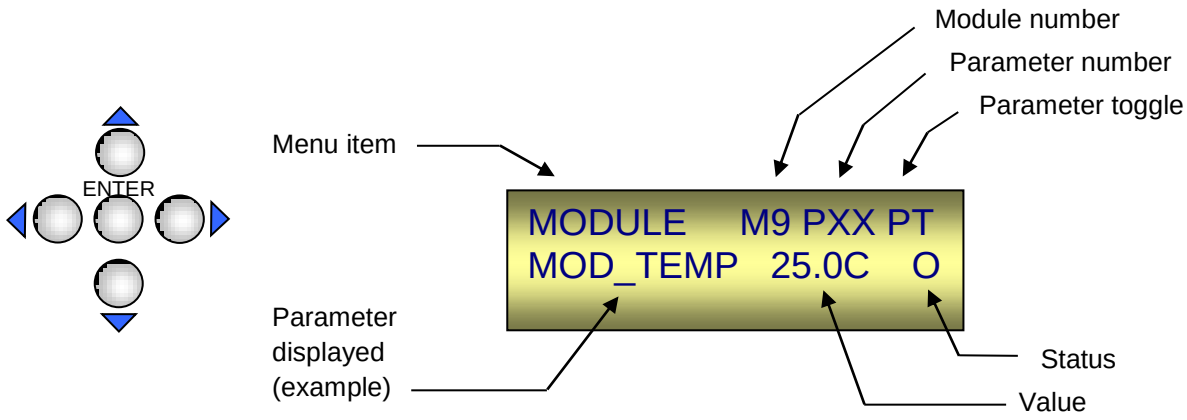
Note:

The OCMR has four lines of text on its LCD; therefore more information may be displayed than shown in the image above. For more information please refer to the OCMR manual.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

5.3.2 Monitoring OSMS Operating Parameters

For a full list and explanation of the parameters used in the OSMS, refer to **Section 5.4** of this manual.



- Perform the steps described in **Section 5.3.1** to select the module you want within the OCM.
- Scroll to menu item **MODULE**.
- Place the cursor at **PXX** using the ▶ key. **XX** is a parameter number from 01 to 32.
- Press ▼ or ▲ to scroll through the parameter list and to view the parameter values.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

5.4 OSMS- Operating Parameter List and Alarm Limits

Parameter	Display (examples)			Description
01	OSMS-1X4			Model Number of unit
02	S/N 9900101			Serial Number of unit
03	S02212	V5.00		Firmware version installed in unit
04	A00488			PBN's part number of Module
05	SLOT_NUM	10		Slot number of unit inside chassis. Set by internal bus plane of OCM
06	MOD_TEMP	25C	O	Temperature inside module: O = ok ⇒ (0 °C – 69 °C) or U = urgent alarm ⇒ (≥70 °C)
07	+14VRL	14.5V	0	14 V rail sensing
08	+5VRL	5.0V	0	5 V rail sensing
09	NOT USED		Z	This parameter is not used
10	NOT USED		Z	This parameter is not used
11	NOT USED		Z	This parameter is not used
12	NOT USED		Z	This parameter is not used
13	NOT USED		Z	This parameter is not used
14	NOT USED		Z	This parameter is not used
15	ALM_LED_R	OFF		Summary Alarm RED LED: OFF = there is no urgent alarm, ON = there is an alarm (urgent or non-urgent depends on state of parameter 16).
16	ALM_LED_G	ON		Summary Alarm GREEN LED: OFF = there is an urgent alarm, ON = no urgent alarm but there may be a non-urgent alarm if parameter 15 indicates H also.
17	OSMS_ALM	OK		This indicates the alarm status from the OSMS unit. OK = no alarm ALM = alarm
18 - 32	NOT USED		Z	This parameter is not used

Note:

Above values displayed are for monitoring purposes only and may vary in accuracy up to 10%.

Status character definitions

"O" indicates "Normal"

"N" indicates "Non-urgent Alarm"

"U" indicates "Urgent Alarm"

"Z" indicates "No Alarm State"

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

6 Specifications

Optical Performance

Operating wavelength:	1260 nm to 1360 nm 1430 nm to 1580 nm
Return loss:	> 55 dB
Directivity:	> 55 dB
Optical connectors:	SC/APC, E2000/APC

Optical Loss - Equal Splits

Model	***Typical Loss***
OSMS-1x2	3.7 dB
OSMS-1x3	5.5 dB
OSMS-1x4	6.8 dB
OSMS-1x5	7.8 dB
OSMS-1x6	8.6 dB
OSMS-1x7	9.3 dB
OSMS-1x8	9.9 dB

Optical Loss - Unequal Splits

Port	***Loss***	***Port***	***Loss***	***Port***	***Loss***	***Port***	***Loss***
05 %	13.8 dB	30 %	6.0 dB	55 %	3.3 dB	80 %	1.6 dB
10 %	10.7 dB	35 %	5.3 dB	60 %	2.9 dB	85 %	1.4 dB
15 %	9.0 dB	40 %	4.7 dB	65 %	2.6 dB	90 %	1.2 dB
20 %	7.7 dB	45 %	4.2 dB	70 %	2.5 dB	95 %	1.0 dB
25 %	6.7 dB	50 %	3.7 dB	75 %	2.0 dB		

General

Power:	Powered by OCM
Dimensions (H x W x D):	160 x 44 x 360 mm
Ship size (H x W x D):	280 x 70 x 570 mm
Weight:	1.0 kg
Ship weight and volume:	1.4 kg - 11.2 dm3
Operating temperature:	0 °C to 45 °C

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

7 Product Warranty

Pacific Broadband Networks warrants its equipment to be free of manufacturing defects in material and workmanship for a period of one year from date of shipment, provided it is installed and operated in accordance with factory recommendations.

The liability of Pacific Broadband Networks under this warranty is solely limited to repairing; replacing or issuing credit provided that:

1. The warranty registration has been completed and received by Pacific Broadband Networks.
2. Pacific Broadband Networks' helpdesk is promptly notified in writing or by telephone that a failure or defect has occurred.
3. A return authorisation number is obtained from Pacific Broadband Networks' helpdesk and clearly marked on the outside of the shipping container and all documents.
4. Customer is responsible for all shipping and handling charges. C.O.D. and freight collect will not be accepted without prior approval from Pacific Broadband Networks' helpdesk.
5. The equipment (in PBN's sole discretion) has not been abused, misused or operated under conditions outside manufacturer's specifications.

The warranty does not cover the following:

1. Products purchased from someone other than an authorised Pacific Broadband Networks dealer.
2. Damage caused by accident, negligence, misuse, abuse, improper operation or failure to operate the equipment within the manufacturer's specifications.
3. Damage caused by fluctuation in electrical current, lightning, power surges, etc.
4. Damage resulting from overhaul, repair or attempt to repair caused by someone other than Pacific Broadband Networks' qualified service personnel.
5. Any product, in which the serial number has been defaced, modified or removed.
6. Any product that has been opened or modified without prior written permission from PBN.
7. Replacement of parts necessitated by normal wear and tear.
8. Any consequential or implied damages.
9. Pacific Broadband Networks will not be liable for DFB Laser failure after 90 days from receipt of item. Any claim for DFB Lasers will be presented to the laser vendor for replacement. Pacific Broadband Networks will make every effort to replace faulty lasers although ultimate judgement is at the laser vendor's discretion. Pacific Broadband Networks will provide all labour costs associated with the replacement of the laser within the one-year warranty period.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

8 Declaration of Conformity

According to ISO/IEC Guide 22 and EN45014

Manufacturer's Name:	Pacific Broadband Networks
Manufacturer's Address:	8-10 Keith Campbell Court, Scoresby, Victoria 3179, Australia
Declares, that the product Product Name:	OSMS – Optical Splitter Module

Conforms to the following standards:

Safety:	EN 80083-1, EN 60950, IEC 950, AS/NZS 3260:1993, EN-60825-1, IEC 825-1, AS/NZS 2211.1 Laser Safety
EMC:	EN 50083-2, EN-55022:1994, IEC/CISPR 22:1993, AS/NZS CISPR 22:2006
CATV/HFC:	EN-50083

Supplementary Information:

CE

This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

The product herewith complies with the requirements of the following directives and carries the CE-marking accordingly:

- The EMC Directive 89/336/EEC
- The Low Voltage Directive 73/23/EEC

The product was tested in a typical configuration with Pacific Broadband Networks.

FCC WARNING

This equipment has been tested and found to comply with the limits for class A device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses and can radiate radio frequency and, if not installed in and used in accordance with the instructions, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference, in which case, the user will be required to correct the interference at the user's own expense.

For Compliance Information ONLY, contact:

Australia:	Pacific Broadband Networks 8-10 Keith Campbell Court, Scoresby, Victoria 3179, Australia Phone:+61-3-9780-5100, Fax +61-3-9763-5522 Email: sales@pbn.com.au
Europe:	Pacific Broadband Networks Phone: +31-36-536-8011, Fax: +31-36-536-4367 Email: sales@pbneurope.eu
China:	Pacific Broadband Networks Phone: +86-10-5791-0655, Fax: +86-10-5791-0855 Email: office@pbn.com.cn
Americas:	Pacific Broadband Networks Americas LLC Phone: +1-703-579-6777 x 567, Fax: +1-703-935-4506 Email: sales@pbnamericas.com

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.

Offices:

China, Beijing : tel. +86-10-5791-0655
Americas, Florida : tel. +1-703-579-6777
AsiaPac, Melbourne : tel. +61-3-9780-5100
Australia, Melbourne : tel. +61-3-9780-5100
EMEA, Netherlands : tel. +31-36-536-8011

info@pbnglobal.com

www.pbnglobal.com

© 2011 Pacific Broadband Networks. All rights reserved.

Downloaded 12.10.2011 by pdhondt@home.nl. Reproduction without consent is prohibited.